

2. (Amended) The apparatus according to claim 1, wherein the detector module comprises:

520  
560  
a precision full wave rectifier; and

an envelope detector coupled to the precision full wave rectifier,

wherein the precision full wave rectifier rectifies a phase signal of the probe to produce a rectified phase signal and the envelope detector detects the rectified phase signal to produce an envelope detected signal.

3. (Amended) The apparatus according to claim 2, wherein the detector module further comprises:

a comparator coupled to the envelope detector; and

an event detector and hold off circuit coupled to the comparator,

wherein the comparator and the event detector and hold off circuit generate an event signal from the envelope detected signal.

4. (Amended) The apparatus according to claim 3, wherein the boost module further comprises a multiplier coupled to the event detector and hold off circuit; and

wherein the multiplier combines the event signal with a probe driver signal to produce the boosted probe drive signal.

6. (Amended) The apparatus according to claim 4, wherein the boost circuit further comprises an event level setting circuit coupled between the event detector and hold off circuit and the multiplier of the boost circuit, wherein the event level setting circuit sets an event level of the event signal.

9. (Amended) A method for reducing the parachuting of a probe obtaining accurate information representative of a surface of a sample comprising:

- scanning the surface of the sample with an oscillating probe;
- measuring an oscillation of the oscillating probe so as to generate a phase signal;
- detecting a reduction of a variation of the phase signal of the probe indicative of free oscillation of the probe; and
- reducing a distance between the probe and the sample in response to the detection of the reduction of the variation of the phase signal of the probe.

19. (Amended) An apparatus for reducing the parachuting of a probe measuring the topography of a surface comprising:

- an oscillating probe;
- a detection module coupled to the oscillating probe to detect parachuting of the probe;
- a boost module coupled to the detection module,

wherein the boost module reduces the parachuting of the probe in response to the detection of parachuting of the probe.

20. (Amended) The apparatus according to claim 19, wherein the parachuting detection circuitry comprises a detector module and the parachuting reduction circuitry comprises a boost module.

**In The Drawings:**

Applicant has amended Figures 1 and 5 in the attached "Request to Approve Drawing Changes." No new matter has been added.